

Claim Amendments

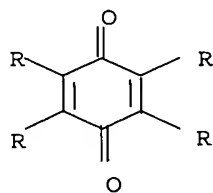
This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

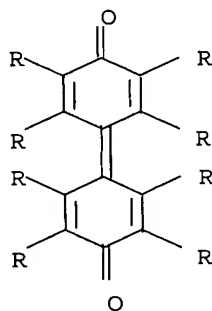
Claims 1-13. (Canceled)

Claim 14. (Currently Amended) A process for emulsion polymerization of one or more olefins, comprising:

i) preparing a catalyst by reacting a) a ligand of the formula Ia or Ib or a mixture of at least two of the ligands Ia or Ib with b-1) a phosphine compound PR'_3 , wherein R' is hydrogen, C_1 - C_{12} alkyl, C_4 - C_{12} cycloalkyl, C_7 - C_{15} aralkyl or C_6 - C_{15} aryl group, or b-2) a diphosphine compound $R'_2P-G-PR'_2$, wherein R' is as defined for the phosphine compound (b-1) and G is ~~C_1 - C_{12} alkyl, C_4 - C_{12} cycloalkyl, C_7 - C_{15} aralkyl or C_6 - C_{15} aryl~~ C_1 - C_{12} alkylene, C_4 - C_{12} cycloalkylene, C_7 - C_{15} aralkylene or C_6 - C_{15} arylene, and c) a metal compound of the formula $M(L^2)_2$ or $M(L^2)_2(L^1)_z$, wherein the formulas of the ligands Ia and Ib (a) are as follows:



Ia

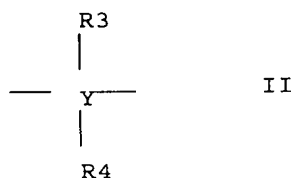


Ib

wherein each R substituent represents one or more of the following radicals:

hydrogen, halogen, nitrile; or C₁-C₁₂ alkyl, C₁-C₁₂ alkoxy, C₇-C₁₃ aralkyl, C₆-C₁₄ aryl groups, each optionally substituted by C₁-C₁₂ alkyl groups, halogens, C₁-C₁₂ alkoxy, C₃-C₁₂ cycloalkyl, C₁-C₁₂ thioether groups, or carboxyl groups or sulfo groups, each being in its acid or salt form, or amino and/or C₁-C₁₂ alkyl substituted amino groups;

amino groups NR¹R², where R¹ and R² together or separately are hydrogen, C₁-C₁₂ alkyl, C₇-C₁₃ aralkyl or C₆-C₁₄ aryl groups and may additionally form a saturated or unsaturated 5- to 10-membered ring, unsubstituted or substituted by C₁-C₁₂ alkyl groups, halogens, C₁-C₁₂ alkoxy, C₃-C₁₂ cycloalkyl, C₁-C₁₂ thioether groups, or carboxyl groups or sulfo groups, each being in its acid or salt form, or amino and/or C₁-C₁₂ alkyl substituted amino groups; and wherein identical or different compounds of the formulae Ia and Ib optionally are bridged by one or more C₁-C₁₂ alkylene, C₂-C₁₂ alkylated azo or formula II bridging moieties, said formula II having the structure:



wherein Y is silicon or germanium and R³ and R⁴ are hydrogen and/or C₁-C₁₂ alkyl; and wherein the definitions of the metals and L groups in the metal compounds are as follow:

M is a transition metal selected from the group consisting of Groups 7 to 10 of the Periodic Chart of the Elements;

L¹ is phosphanes (R⁵)_xPH_{3-x} or amines (R⁵)_xNH_{3-x} with identical or different radicals R⁵, ethers (R⁵)₂O, H₂O, alcohols (R⁵)OH, pyridine, pyridine derivatives of the formula C₅H_{5-x}(R⁵)_xN, CO, C₁-C₁₂ alkyl nitriles, C₆-C₁₄ aryl nitriles or ethylenically unsaturated double bond systems, x being an integer from 0 to 3;

R^5 is hydrogen, C_1 - C_{20} alkyl groups, which may in turn be substituted by $O(C_1$ - C_6 alkyl) or $N(C_1$ - C_6 alkyl) $_2$ groups, C_3 - C_{12} cycloalkyl groups, C_7 - C_{13} aralkyl radicals, or C_6 - C_{14} aryl groups,

L^2 is halide ions or $R^6_xNH_{3-x}$, where x is an integer from 0 to 3 and R^6 is C_1 - C_{12} alkyl or C_1 - C_6 alkyl anions, allyl anions, benzyl anions or aryl anions, and optionally L^1 and L^2 being linked to one another by one or more covalent bonds; and

z is a number from 0 to 4; and

ii) immediately (co)polymerizing one or more olefins in water or a solvent mixture with a water content of at least 50 % by volume in the presence of an emulsifier and, optionally, of an activator.

Claim 15. (Previously Presented) The process as claimed in claim 14, wherein one or more olefins are emulsion polymerized as a miniemulsion in water, produced with the aid of ultrasound.

Claim 16. (Previously Presented) The process as claimed in claim 14, wherein said activator is present in the (co)polymerization medium.

Claim 17. (Previously Presented) The process as claimed in claim 16, wherein said activator is an olefin complex of rhodium or nickel.

Claim 18. (Previously Presented) The process as claimed in claim 16, wherein said emulsifier is an ionic emulsifier.

Claim 19. (Previously Presented) The process as claimed in claim 14, wherein one of said olefins is ethylene.

Claim 20. (Previously Presented) The process as claimed in claim 14, wherein one olefin is ethylene and the comonomer is selected from the group consisting of propylene, 1-butene, 1-hexene and styrene.

Claim 21. (Previously Presented) The process as claimed in claim 14, wherein the olefin for polymerization is ethylene.

Claim 22. (Previously Presented) The process as claimed in claim 14, wherein said ligands Ia to Ib are combined in a ratio of 10 : 90 to 90 to 10 mole %.

Claim 23. (Previously Presented) The process as claimed in claim 14, wherein the metal compound is combined with the phosphine or diphosphine in a molar ratio ranging from 1:1000 to 1000:1.

Claim 24. (Previously Presented) The process as claimed in claim 14, wherein the ligand Ia or Ib is combined with the phosphine or diphosphine compound in a molar ratio ranging from 1:1000 to 1000:1.

Claim 25. (Previously Presented) An aqueous dispersion of a polyolefin or copolymer of two or more olefins, prepared as set forth in claim 14.

Claim 26. (Previously Presented) An aqueous dispersion of a polyethylene or ethylene copolymer, prepared as set forth in claim 14.

Claim 27. (Previously Presented) The aqueous dispersion as claimed in claim 25, which is in the form of a miniemulsion.

Claims 28-30. (Canceled)

Claim 31. (New) A method of paper coating, comprising:
coating paper with an aqueous pigmented dispersion comprising the aqueous emulsion of polyethylene prepared by the process of claim 14.

Claim 32. (New) A method of surface sizing, comprising:
coating a substrate with a hydrophobicizing substance containing the aqueous emulsion of polyethylene prepared by the process of claim 14.

Claim 33. (New) A method of treating carpet backings, comprising:
applying an aqueous emulsion of polyethylene prepared by the process of claim 14 onto a carpet backing.

Claim 34. (New) A method of preparing a paint or an adhesive base material, comprising:
incorporating the aqueous emulsion of polyethylene prepared by the process of claim 14 into the ingredients of a paint formulation or an adhesive formulation.

Claim 35. (New) A method of preparing a foamed molding, comprising:
molding a foamable composition containing an aqueous emulsion of polyethylene prepared by the process of claim 14.

Claim 36. (New) A method of treating textiles and leathers, comprising:
applying a textile or leather treating composition containing an aqueous emulsion of polyethylene prepared by the process of claim 14 to said textile or leather, thereby finishing the textile or leather.

Claim 37. (New) A method of preparing pharmaceuticals, comprising:
dispersing a therapeutically active agent into the aqueous dispersion of polyethylene prepared by the process of claim 14.